northern telecom

90-314

Statement in Support of the FCC Demand Panel
Related to
Personal Communications Services

April 11, 1994

Good Morning, Mr. Chairman, Commissioners, Members of the PCS Task Force, Dr. Robert Pepper, I am Dave Twyver, President of Northern Telecom's Wireless Systems organization headquartered in Richardson, Texas. Thank you for inviting Northern Telecom to address the important issue of PCS demand. Northern Telecom strongly believes there will be significant demand for PCS by consumers and businesses alike and as a result, we are fully committed to the growth and development of the PCS industry. Northern Telecom is so convinced that PCS will fulfill unsatisfied consumer and business needs that my Wireless Systems organization has already invested several hundred million dollars in U.S. research and development and employs in excess of 1000 employees in wireless activities in the United States. Our wireless organization is expected to at least double in the near future and we have plans to begin manufacturing in North Carolina and California as soon as the Commission's rules are finalized. We believe Northern Telecom's plans and experiences are not unique and will be duplicated by other manufacturers across the country, if the Commission acts in an expeditious fashion.

We have derived our PCS demand projections from primary research, market trials, ongoing dialogue with U.S. distributors and end customers, global experience with wired and wireless communications solutions, and external industry forecasts like those that will be presented by others on this panel.

It is clearly in the public's best interest, that the Commission's rules permit the demand for PCS to be maximized. This will result in -- (1) the largest addressable market allowing many players to successfully compete, (2) the highest volume of product to be manufactured, thus creating economies of scale and scope to minimize costs, and (3) allow U.S. manufacturers to export innovative and cost effective telecommunications solutions to a global marketplace, as well as increase jobs and services in the United States.

Our studies have shown that there is significant demand for mobility. Currently over 16 million people use cellular phones for vehicular and public mobility and almost 50% of all homes have the convenience of cordless phones. Additionally we have found that 20% of in-building workers and 50% of workers away from their office find themselves out of touch for more than two hours per day. Yet our market research shows that the over 50% of businesses which are utilizing existing products, such as analog cordless, SMR, paging and cellular to meet mobility needs in the office, have varying degrees of dissatisfaction based on functionality or price.

Northern Telecom envisions PCS initially offering high quality voice and data services, but as technologies evolve from today and applications are better defined, PCS will migrate towards higher quality multimedia communications and advanced intelligent network services for all market areas, playing a key role in the development of the National Information Infrastructure.

Northern Telecom anticipates significant demand in all PCS markets enabled in the PCS Report and Order for all frequency blocks in both the 1850 - 1990 and

2130 - 2200 MHz bands and we urge the Commission to retain the current channelization plan. To address the varying applications, Northern Telecom will introduce products for licensed PCS, unlicensed PCS, and licensed PCS applications in the 10 MHz channels.

We believe there are significant opportunities for both licensed and unlicensed PCS. These services are complementary, yet address different applications. The significant differences are as follows:

- While there may be instances where the unlicensed band will be used by service providers to provide wireless communications services to an industrial park, multi-tenant building, or small rural community, the licensed band will generally be more conducive and cost effective for public service offerings requiring wide area seamless coverage in a geographic area. This is due to the power difference between the two offerings and the resultant costly infrastructure that would be required to support the many pico cells and that would be required to provide seamless coverage using low power.
- Licensed PCS will provide both in-building and wide area mobility.
- Unlicensed PCS is optimized for in-building and campus mobility and will provide a means by which enterprises with many offices nationwide can self-select a particular technology and deploy it in all locations independent of service provider offerings.
- Unlicensed PCS will provide businesses with the flexibility to own their wireless telecommunications equipment versus lease radio frequency spectrum services.

- Unlicensed PCS provides a platform in which small entrepreneurial companies can provide competitive innovative services without the need to convince a service provider to adopt its innovative service application.
- Northern Telecom believes licensed PCS applications in the 10 MHz channels will take the form of innovative low-power PCS services serving niche market segments. Examples of these services include, wireless loop, in-building voice and data, localized campus coverage for schools, hospitals, universities, and large businesses, local or regional messaging, and data or information access. These services will likely be brought to market by minority and women owned business or small entrepreneurial businesses in a specific geographic area. We are developing technologies in this area and have customers who are eager to deploy service using this band.

In 1993, primary focus group research was commissioned by Northern Telecom for licensed PCS. Users spoke of the desire to have a user friendly, price competitive service, including high quality transmission and flat billing rate options, with coverage which is tailored to their needs and includes in-building, rural, and high density traffic applications. Additionally these users believe that PCS must drive applications, such as two way message services, voice mail, data on demand, as well as benefit society through affordable access to educational on-line information and emergency services. This will ultimately drive PCS usage to the entire family, versus to just business or mid to upper class consumers who use wireless services today.

Northern Telecom has been conducting primary research since 1990 in the area of unlicensed PCS . A variety of research techniques have been employed including

telephone interviews, face to face interviews, and focus groups. Hundreds of communications managers, users and distributors, drawn randomly and on a targeted basis from representative samples of small, medium and large businesses, provided their views of needs and expectations for wireless technologies. Our research indicated that specific vertical markets will adopt wireless technology earlier than others, for example, health care, hospitality, manufacturing, retail and finance. Equally important, the research also indicated that horizontal applications exist across all industry segments, with a consistent need for mobility demonstrated by maintenance and security staff, information services, telecommunications and facilities personnel, as well as managers and supervisors. It was clearly demonstrated that business customers expect wireless voice quality and functionality in-building to be commensurate with wireline.

Another important aspect in the development of Northern Telecom's PCS market understanding is through market trials conducted under FCC experimental license. Included in these trials are three with community hospitals and three with universities. At a southern university specializing in teaching and business, unlicensed PCS technologies are being used by administrative staff, assisting them in being more responsive to students and faculty requests. In a southern acute care medical center, nurses in the surgical care unit can promptly attend to patient's needs while receiving critical information from the patient's doctors.

Northern Telecom believes that licensed PCS will grow to a subscriber level of at least 8.5 million users by 1998 with a 3% penetration rate in the United States. Our view of the unlicensed PCS opportunity is also substantial. We anticipate by 1999, wireless penetration of the installed base of multi-line business could approach 8% depending on price evolution, representing some 9 million users.

These growth rates are based on the licensing of spectrum in the 1994 time period and the early deployment of unlicensed PCS devices. However, these projected growth rates are not at the expense of cellular, as it is projected to grow to a 30 million subscriber level during this same time period.

There are three key factors that we believe will significantly impact the demand for PCS. These factors include costs, delays in the deployment, and complexity. In our previous PCS filing dated November 9, 1992, Northern Telecom provided information from market research that showed that the demand for PCS services is very price elastic -- as handset prices increased, consumer demand decreased rapidly. Our research has shown if handset prices were $200 or below, at least 70% of consumers would have an interest. As handset prices steadily increase, consumers are less interested with little to no demand beyond $400. Monthly subscription costs have a similar demand relationship. Additionally, delays in the deployment of PCS will significantly reduce demand. This reduction in demand results from cellular growing at a significant rate, meeting some but not all the demand for mobility applications. Complexity in the licensing process will also cause barriers to entry. Simple processes will allow for maximum flexibility for manufacturers and service providers to meet user needs.

Northern Telecom believes the Commission can significantly impact the maximization of demand and utilization of the very important capabilities PCS will provide to consumers by focusing and taking action in the following areas:

- <u>Rule on the PCS reconsideration issues expeditiously</u>

  Studies by PCIA and A. D. Little have shown that if the PCS industry is delayed, the demand for such services will significantly decrease. Delays in

the deployment of these services will impact this country's competitive position internationally, allowing other countries to become more technologically advanced and reducing our exports. In addition, if PCS is to provide a competitive alternative to other wireless services, the industry must start expeditiously since cellular subscribership is growing at the rate of 5 million subscribers per year and cellular network capabilities are rapidly evolving in anticipation of PCS competition. The adverse impact delays will have on demand and competitive positioning will in turn adversely affect this country's economic structure and much needed new business and job opportunities the PCS industry will provide. We are ready to ship product now and have many customers and end users who are eager to deploy it immediately. The Commission needs to act now to make PCS a reality.

- Increase base station power limits for licensed PCS

  Our studies have shown that increasing the power limits for licensed PCS base stations will reduce the number of cell sites, in many instances by 50%, and will provide economical coverage to rural areas. This reduction in cell sites will dramatically reduce infrastructure costs, as well as environmental pollution. As mentioned previously, studies have shown that subscriber penetration drops significantly as infrastructure costs increase since this cost is passed on to the consumer. Many of our customers have suggested if the power levels remain as they are, they will not find PCS an attractive business. It should be emphasized that only base station power levels need to be increased, not handset power levels which are generally closer in proximity to the body. A minimum of 1000 Watts EIRP is required for equality with cellular and to enable utilization of existing technologies. A

power level of at least 1600 Watts EIRP will allow for incorporation of emerging antenna technologies.

- Retain current unlicensed PCS allocation in the lightly loaded spectrum

  Manufacturers of unlicensed equipment will, through UTAM, fund the relocation of incumbent microwave users. The hundreds of millions of dollars required for this relocation will be raised by levies on products deployed before and during relocation of incumbent microwave users from the unlicensed bands. In order for this self-funding approach to work, large, contiguous areas clear of incumbent users is mandatory right from the start. Northern Telecom commends the Commission for allocating 40 MHz of spectrum to unlicensed PCS. Furthermore, Northern Telecom agrees with the Commission's 20 MHz allocation of equally loaded spectrum, each to asynchronous and isochronous devices. We urge the Commission to persist in this allocation to assure early deployment for unlicensed PCS.

- Adopt the complete WINForum Etiquette

  The complete Etiquette as adopted by WINForum (including items excluded in the PCS Report and Order) is essential for the success of unlicensed PCS. By controlling mutual interference, the provisions in the Etiquette will maximize the number of different manufacturer's equipment that can coexist in the unlicensed band and maximize market acceptance. The provisions in the Etiquette also set forth a framework for future development of industry standards.

- Allow industry to adopt standards for PCS where they are appropriate

  Northern Telecom has always been a strong proponent of technical standards and believes that industry members should bear the responsibility for developing such standards. The industry is rapidly moving forward to define standards where services are well understood. Future standards will evolve as innovative applications with broad market acceptance are defined. Government intervention would simply add political delays to the already entrenched technical and commercial activities.

- Eliminate the current build-out requirements for licensed PCS in the 10 MHz channels

  As mentioned previously, applications in this band will generally accommodate very specialized needs in a particular geographic area and provide innovative low power services. The current build-out requirements could stifle innovation and burden these applications with substantial overhead costs, which might eliminate their commercial viability and inhibit opportunities for small business owners.

Northern Telecom has been an active participant in this PCS proceeding from its inception in 1990 to the present. Northern Telecom believes PCS has tremendous implications for this country's leadership in competitive global telecommunications markets, intelligent networks, radio-based technologies, and in the United States' National Information Infrastructure. The Commission is to be applauded in its efforts to assist in the development of this very important market and in its commitment to the rapid and efficient deployment of these

services. I commend to your attention, and am filing for the record, a copy of the videotape we have produced that effectively conveys our vision of the evolution of demand for PCS services and their role in U. S. society and the National Information Infrastructure. Northern Telecom will continue to assist the task force and Commission in this very important endeavor.